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Title : DISTINCTIONS BETWEEN INSHORE AND OFFSHORE BOTTLENOSE DOLPHINS Tursiops truncatus AS REVEALED BY CARBON AND NITROGEN STABLE ISOTOPES

Category : Ecology

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Abstract : Although there are no universal criteria, two "forms" of Tursiops truncatus have been described in the ocean: inshore and offshore ecotypes. In this study, we demonstrate that variations in stable isotope composition can be useful in distinguishing between the two forms of this species. This is corroborated by sighting photographs showing clear characteristics that permit their identification in the field. In the Gulf of California, the inshore form, in comparison with the offshore form, is bigger, lighter-colored in lateral and dorsal view, with a shorter, wider rostrum, and apparently shorter flippers. Thirty-five skin biopsy samples of bottlenose dolphins were obtained in the Gulf of California during 2001-2002 to determine the enrichment of C and N stable isotopes ($\delta^{13}C$, $\delta^{15}N$). The differences in the $\delta^{13}C$ values of individuals previously identified as inshore or offshore (-12.9 ‰, SD= 0.38 and -15.7 ‰, SD= 0.39, respectively) were significant ($F_{2,32}=74.44$, $P<0.001$). This is in agreement with the fact that coastal systems present enriched 13C levels compared to offshore systems. Although there were no significant differences between ecotypes for $\delta^{15}N$ (inshore = 18.4 ‰, SD= 0.07, offshore = 18.8 ‰, SD= 0.56), the relative trophic position of offshore bottlenose dolphins was similar ($F_{4,88}=25.10$, $P<0.001$) to that of the groups of female and juvenile sperm whales (Physeter macrocephalus) ($\delta^{13}C$ = -15.3 ‰, SD = 0.69, $\delta^{15}N$ = 19.3 ‰, SD = 0.65) with whom they associated. Since the $\delta^{13}C$ values are also the same, the offshore bottlenose dolphin very likely feeds on the same prey as the sperm whales, the jumbo squid (Dosidicus gigas). These results clearly show that the inshore and offshore ecotypes of the bottlenose dolphins in the Gulf of California feed on similar trophic level prey but these derive from different ecosystems.